REMARKS

Reconsideration and allowance of the above-identified Application in view of the above amendments and the following remarks are respectfully requested.

Claims 1-6 are pending in the Application, clams 5 and 6 being newly presented herewith.

Applicant notes with appreciation the Examiner's indication that claim 4 would be allowable if rewritten in independent form. Applicant has thus added new claim 5 to contain all the limitations of original claim 1, as amended to remove recitation of "means." Applicant believes claim 4 remains allowable. New claim 6 contains the subject matter of claims 4, 2, and 1.

Applicant has amended claims 1-4 to remove all use of the term "means" to make it clear that the claims contain no means-plus-function limitations and are thus not limited to only the structures disclosed in the specification, and equivalents thereof. Applicant further amended claims 1-4 to clarify the intended meaning for such a base claim.

The Examiner rejected claims 1-3 under 35 U.S.C. §103(a) as being obvious from Arisaka et al (JP 1022174 A) in view of Matsumoto (U.S. Patent No. 5,446,514) and further in view of SanGregory et al. (U.S. Patent No. 5,432,576). Applicant respectfully traverses for at least the following reasons.

According to the aspects of the present invention recited in claim 1, two shutter blades are driven by a reciprocating motor not only to perform exposure operation but also to regulate the aperture diameter. That is, the two shutter blades act as diaphragm blades also, to form three states of an exposure aperture, i.e., the aperture fully opened state, the aperture closed state, and the aperture diameter regulating state, where the rotor is at a position in its rotational angular range between the initial position (corresponding to a fully opened aperture) and the final position (corresponding to closed aperture). For this type of shutter, it is important to maintain a stopped condition of the rotor (and the shutter blades) not only at the aperture fully open position and the aperture closed position but also at the aperture diameter regulating position. These three states are steadily maintained even when a current to the coil is interrupted. The aperture diameter regulating state is formed when the rotor is at a position slightly displaced from the midpoint angular position of the rotational angular range, so that imbalance of

magnetic attractive force caused by the magnetic holding members can urge the rotor in a predetermined direction at the aperture regulating state, while, in this aperture diameter regulating state, a forcing device urges the shutter blades against the attractive force caused by the magnetic holding members.

To clarify the meaning of claim 1, it is amended to recite "a forcing device configured to directly or indirectly prevent rotation of said rotor, when energization of said coil is interrupted at an exposure aperture regulating position of said rotor where said rotor has been rotated from the midpoint angular position by a predetermined angle within an angular range that is narrower than the predetermined rotational angular range, by exerting an urging force against the attractive force, so as to maintain a small-diameter aperture regulating state formed by said two shutter blades".

On the other hand, in the device of Arisaka et al (JP 1022174 A) shutter wings 4, 5 are driven by a motor 6 via an output pin 6f, while diaphragm wings 7, 8 for regulating aperture diameter are provided separately from the shutter wings and are driven by motors 9, 10 via output pins 9f, 10f, respectively. Thus, Arisaka et al. do not disclose or suggest that any rotor or wing is stopped in a course of its movement between the fully opened position and the closed position, much less the particular structure recited in amended claim 1, because such an action is not required for this type of shutter. Therefore, a person of ordinary skill in the art would not be motivated to incorporate any reference into Arisaka et al. to lead to the subject matter of claim 1.

Furthermore, even if one were to combine the cited references, it would not lead to the claimed invention, for at least the following reasons.

Matsumoto fails to disclose or suggest a diaphragm. The shutter blades 2, 3 of Matsumoto only perform exposure operation (opening and closing an exposure aperture 1a) as do the shutter wings 7, 8 of Arisaka et al. Accordingly, Matsumoto also fails to disclose or suggest that the shutter blades and the motor 15 are stopped in the course of their movement between the aperture fully opened state and the aperture closed state. Therefore, incorporating Matsumoto into Arisaka et al. could not lead to the feature that the rotor maintains its stopped condition not only at the aperture fully opened position and the aperture closed position but also at the aperture regulating position in the course of its rotational movement.

The aperture blades 1, 2 of SanGregory et al. can form aperture diameter regulating state (S) (shown in FIGs. 3-5). SanGregory et al. disclose an actuator 3 that drives the shutter blades 1, 2, and moving hard stops 7a, 7b, 7c that can abut on the aperture blades. For example, in the aperture regulating state shown in FIG. 4, the hard stop 7a is withdrawn from the operation path of the aperture blade 2 upon being in magnetically non-energized state, while the hard stop 7b is in the operation path of the aperture blade 1 to abut thereon upon being magnetically energized, and resultantly the exposing area 16 is formed. According to SanGregory et al. the aperture diameter regulating state is maintained by the hard stops which can be inserted into and withdrawn from the operation path of the shutter blades to stop or let move the shutter blades. This mechanism is quite different from the mechanism of the present invention, in which the aperture diameter regulating state is maintained by a magnetic attractive force that urges the rotor in one direction and an urging force caused by the forcing members that urges the shutter blades against the attractive force. Furthermore, according to SanGregory et al., when photographing operation is performed with the aperture size being regulated, a current continues to be supplied to the actuator 3 until a predetermined exposure time period elapses. Consequently, SanGregory et al. discloses quite different structure to maintain the exposure aperture regulating state than that of the current invention. Therefore, even if one were to incorporate SanGregory et al. into the combination of Arisaka et al. and Matsumoto, it could not lead to the subject matter of claim 1.

New claim 5 corresponds to original claim 4/1, and new claim 6/5 corresponds to original claim 4/2/1.

All rejections and objections having been addressed, it is respectfully submitted that this Application is in condition for allowance, and such a Notice is earnestly solicited.

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Respectfully submitted,

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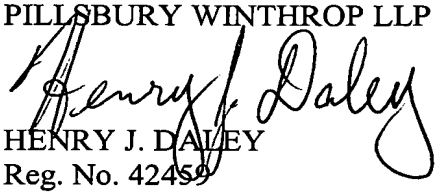

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